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This series showcases innovative microfinance programs from the February 2000 "Advancing Microfinance in Rural West Africa" conference held in Bamako, Mali. The programs emphasize reaching new frontiers in rural areas, particularly in West Africa. These notes are an investigation of innovative practices working in specific environments, not a general endorsement of financial products. We recommend institutions utilize these technical notes as introductory information. To learn more about this topic and its applicability to your program, please consult the bibliography at the end of the piece.

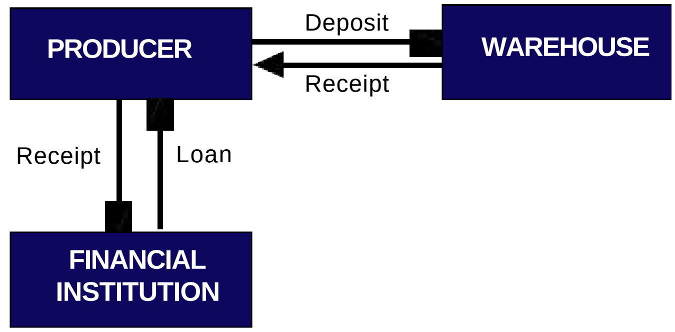
Warehouse Receipts: Financing Agricultural Producers

I. Introduction

Small-scale farmers have always struggled to pay their debts. They often sell off their goods when harvest season begins so they can hold onto their crops until the lean season, when the price and potential for profits are at their highest. However, improper preservation or drying techniques, coupled with inadequate storage facilities, can force small farmers to let commercial or foreign traders reap the rewards of seasonal price swings. With the use of warehouse receipt financing, also known as inventory credit, small farmers gain an advantage on the playing field.

Experience from around the world illustrates that warehouse receipts can make a difference to farmers. By storing their goods in a reliable warehouse until the price increases while using the goods as loan collateral, farmers may access funds before they sell their goods. Warehouse receipts are often administered to producer groups, instead of individuals, which helps the flow of market information. Warehouse receipts also can create price transparency. This empowers farmers to make informed sales decisions rather than waiting for "farmgate" buyers who often offer below-market prices.

THE WAREHOUSE RECEIPTS FINANCING PROCESS



Microfinance institutions (MFIs) also have a strong incentive to offer warehouse receipt financing. With this system, their risk is reduced because the system has a built-in use of collateral that can retain a high commercial value and be liquidated quickly.

But warehouse receipt financing is, in essence, a speculative activity. Producers often attempt to wait until the market has reached its perceived peak to gain the highest profits. This activity often leaves the farmer with the bulk of the harvest as prices begin to decrease, leaving the farmer with the smallest possible profits. Preventing this type of speculation is critical to making warehouse receipts a success. The key, however, is to ensure that a few critical factors, such as a good warehouse system and careful monitoring, are in place to make it a success.

II. Nuts and Bolts of Warehouse Receipts

Warehouse receipt financing is the use of securely stored goods as loan collateral. These programs allow producers to deposit a finished good or agricultural product in a secure warehouse where the producer receives a receipt certifying the deposit of goods of a particular quantity, quality, and grade. The farmer can use the receipt as a form of portable collateral to request a loan from a financial institution such as a bank or an MFI.

There are typically three parties involved in warehouse receipt financing: the bank, the farmer, and the warehouse. The farmer identifies a warehouse and takes his or her goods to the warehouse for deposit. The warehouse operator grades and classifies the goods and gives a receipt for storage of said goods to the farmer. The farmer then takes the receipt to the MFI and, based on projections of the goods' market value, the MFI gives the farmer a loan. The loan is extremely flexible as it allows the farmer to spend it to finance expansion activities, pay off debts, or use it for any other reason.

Warehouses can be either open to the farmer, allowing the farmer to withdraw produce at any time, or sealed, so the farmer cannot access produce until a predetermined date. If the produce is withdrawn, the farmer must repay the bank for the loan—principal and interest—and the warehouse operator for any storage fees. Alternatively, the farmer may use the warehouse as a channel for selling the goods, in which case the goods are released to the buyer, the loan and fees are deducted from the selling price, and any remaining profits are released to the farmer.

III. Types of Warehouses

Warehouses operate in a number of ways. Each type of warehouse provides the customer with a different range of security and services. The five basic types of warehouses are:

- **Public warehouses** are open to anyone on a non-qualifying basis. Any person who brings in agricultural goods may store them in a public warehouse.

- At **field warehouses,** an operator manages a warehouse on the premises of another business. This occurs in industries such as milling or cotton spinning where the industry finances the acquisition of raw materials, while someone else controls the stock for the bank.

- **Dual-key warehouses** provide secure storage as both the bank and the depositor have control over the warehouse. Both parties hold keys to the storage facility, and both keys must be presented to access the facility.

- **Self-managed or single-key warehouses** provide depositors with complete control over their goods at the storage facility. Typically, a bank or an MFI provides some supervision.

- At **trading warehouses,** the warehouse operator trades the stored commodity on the depositor's behalf. This may seem to be a conflict of interest for the warehouse operator, but these facilities have operated successfully in North America for many years.

IV. Warehouse Receipts: Advantages and Disadvantages

As in all types of microloans, there are advantages and disadvantages for the MFI and the client with warehouse receipts. The advantages and disadvantages include:

FOR THE MFI

Advantages

- **Decreased risk:** Warehouse receipts provide entrepreneurs with instant collateral to guarantee a loan. Having this type of collateral with a high market value is attractive to MFIs, which usually rely on group pressure to ensure loan repayment, especially when lending to first-time loan clients who do not have a proven track record.

- **Reduce seasonal price variability:** The warehouse receipt system has the effect of smoothing out seasonal price variations throughout the year for a specific agricultural product. As this occurs, more people will become involved in the warehouse system, which can result in shorter and more competitive supply chains.

- **Liquidity:** Unlike real estate or other forms of collateral, the warehouse receipt is liquid. It can be converted into cash either at a bank or at the marketplace. This is especially attractive to MFIs, which may have difficulty collecting repayments from the farmer.

Disadvantages

- **Decreasing profitability:** Experience has shown that some warehouse receipt programs help market prices level out and the overall price remain steady. In methodologies where the loan amount is tied to the estimated worth of the product, a decreased price decreases the loan amount available to the farmer and the interest that the MFI collects.

- **Warehouse operation:** This system works only if there are reliable warehouses in place. An MFI can establish or manage a warehouse, but experience has shown that this is usually not sustainable for the MFI. If an MFI must step in to build or manage a warehouse, it should proceed cautiously and add this cost to the price of its inventory credit program.

FOR THE ENTREPRENEUR

Advantages

- **Profitability:** Warehouse receipts allow small-scale farmers to delay the sale of goods, allowing them to take advantage of large seasonal price swings for produce while obtaining cash when the harvest begins.

- **Price transparency:** A side effect of the warehouse system is that farmer groups work together with the warehouse operator to establish prices based on the product's market value. This empowers farmers by providing them with up-to-date information on prices throughout the season. The farmers gain additional knowledge about current prices and can become "price setters" rather than "price takers."

- **Food security:** Farmers can realize savings by "buying back" their produce from the warehouse for home consumption during the lean season when food prices are high.

Disadvantages

- **Speculation:** Warehouse receipts promote speculative activity on the seller's part because the farmer tries to maximize profits by holding the produce until the price reaches its peak. Once the price peaks, the rush of additional inventories into the market causes the price to fall almost immediately. This practice may catch farmers with more than half of their inventory selling at the lowest, instead of the highest, price. The net effect is to substantially decrease overall profits.

- **Shortage of small-scale drying or preservation technologies for agricultural products:** This is especially true in rural areas, where the technology can be scarce or expensive; as a result, the stored product is at risk for spoilage, loss from pests, and quality depreciation.

- **An unreliable supply or shortage of storage chemicals** that are needed to preserve agricultural goods can decrease the farmer's total volume of usable produce and compromise the product's total value, thus decreasing the farmer's ability to receive the best price for the produce.

- **Transporting of goods to the warehouse** is an added expense to the farmer. In rural areas where trucks and fuel are expensive and difficult to obtain, transporting the goods for storage in the next village or closest town poses a major challenge. High transport costs will make farmers less likely to store their goods.

V. Key Requirements to Ensure a Successful System

Implementing a successful warehouse receipt program can be done easily if a few key factors are in place. These are lessons learned from the experience of MFIs in Ghana, South Africa, and other African countries.

- **Build discipline and trust in the warehouse:** If the warehouse operator is trustworthy, MFIs can rely on the receipt with confidence as loan collateral. Trust in the warehouse also provides the entrepreneur with a sense of security.

- **Operate on a large scale:** The cost of warehouse receipt administration and oversight decreases with scale. The more warehouses available, the lower the cost of monitoring the system.

- **Understand that appropriate product pricing is critical for the MFI:** On average, the cost a farmer is expected to carry—that is, the interest on the loan plus warehouse storage fees—typically averages around 25 percent of estimated total profits at the beginning of the harvest season. This is a very high percentage for MFIs to pass on to their customers. MFIs do need to charge what is necessary to cover their costs, but successful MFIs will look for ways to cut costs. One way is to work in a region where there are already established and trustworthy warehouses. Warehouse oversight and management are extremely costly and almost never sustainable when the MFI manages the process.

- **Advocate for appropriate regulation and supervision of the sector:** Regulation is critical to the success of warehouse receipts, and government must be committed to finding the correct balance of regulatory oversight. There are two main approaches to regulation: the minimalist approach, which involves low regulatory oversight, and the maximum approach, which involves high regulatory oversight.

- ➩ The **minimalist approach** allows banks to individually screen and oversee warehouse operators without government oversight. It is typically an efficient process, but it usually works when there are large clients in ports or other urban areas. Because of the high cost of maintaining and overseeing this system, MFIs cannot sustain the system. Very rarely does this system reach into rural areas.

- ➩ The **maximum approach** advocates for national government oversight to oversee warehouses and institute a national grading system. This system takes the oversight burden off the MFI and often allows for the spread of inventory credit into rural areas. This system, however, needs an efficient and non-corrupt governing body to provide appropriate oversight.

VI. Impact

Warehouse receipt financing can be profitable for both MFIs and farmers. Experience has shown that MFIs can enjoy a high repayment rate on warehouse receipt loans. Farmers can increase their possible selling price by as much as 230 percent, in some cases. That is a sizable impact in light of the risks involved in agricultural microenterprises.

But experience has shown that a program can be too successful. Although this sounds counterintuitive, TechnoServe Ghana has been so successful in its inventory credit program that other institutions, including the Ghanaian government, have reentered the market. This has drastically increased the amount of maize on the market during what had once been the lean season and has drastically dropped the estimated peak price and farmers' profits. But even with the flush of maize into the market, farmers are still reaping rewards above that which would have otherwise been possible.

The table below illustrates the results of TechnoServe Ghana's inventory credit program since its inception. There has been a declining rate of return for farmers, while the total amount of loans has increased steadily over time. This does have implications for an MFI's ability to sustain its program over the long term.

Estimates of Net Incremental Earning from Maize under Inventory Credit in Ghana

Year	Harvest Time Price/ Bag	Loan/Bag (75% of A)	Cost of Loan and Other Storage Costs (actuals)	Selling Price/ Bag (actuals)	% Increase from Harvest to Sales Price (D-A) /A*100	% Net Incremental Benefit to Farmer (D-(A+C))/ A*100
	(A)	(B)	(C)	(D)	(E)	(F)
1992/93	8,000	6,000	1,097	13,937	74%	61%
1993/94	8,000	6,000	2,138	14,290	79%	52%
1994/95	8,000	6,000	3,096	29,566	270%	231%
1995/96	15,000	11,250	4,667	24,347	62%	31%
	36,000			79,300	120%	84%

* Inflation for Ghana over the same period should be taken into account in reviewing the true level of profits to the farmer. The inflation rate (GDP deflator, %) was:

	1992	1993	1994	1995	1996	1997	1998	1999
Inflation	12.8	22.2	24.0	20.0	21.5	24.1	22.9	23.7

Sources: Kwadzo, George. "Inventory Credit: A Financial Product in Ghana." Presented at the conference on "Advancing Microfinance in Rural West Africa." Bamako, Mali, February 2000. Inflation statistics taken from "World Bank Live On-line Database: Africa Summary Briefings," World Bank, August 2000, www.worldbank.org.

VII. Lessons for MFIs

To ensure a successful warehouse receipt system, MFIs need to be more involved in the system than simply giving loans based on the collateral presented. In Ghana, TechnoServe has been implementing an inventory credit program for over a decade. From this rich experience, the organization has learned that to be successful, an inventory credit program needs to incorporate the following lessons into its strategy:[1]

- Understand annual price cycles and monitor market prices closely to remain knowledgeable about the real value of the product being stored;
- Identify buyers early so the MFI and the farmer are aware of the buyer's needs concerning quality and quantity when the season begins;
- Ensure that the farmer handles the product appropriately;
- Manage risk by taking in stocks only over a specified time period and within strict price guidelines;
- Control grain quality;
- Develop detailed sales agreements that include specifics on pricing, packaging, quality, point of delivery, and contract duration;
- Ensure clear and complete internal communications; and
- Monitor government policies and actions in the sector.

VIII. Institutional Examples

TECHNOSERVE GHANA: HELPING PRODUCER GROUPS SUCCEED

The goal of TechnoServe's inventory credit program has been to provide an opportunity for small-scale farmers to take advantage of seasonal price swings that are otherwise captured by local traders. This opportunity allows farmers to accumulate savings for investment in less speculative activities.

When the harvest begins, TechnoServe assesses how much group members plan on storing and the credit amount anticipated. TechnoServe does not provide the loans directly but instead arranges with a lending institution to provide the credit based on the warehouse receipts that TechnoServe's group members present. When the goods arrive at the warehouse, they are graded for quality in terms of moisture content, foreign bodies, and weight per bag before being deposited in a designated community storage facility. The collateral manager issues a receipt that the client presents to the bank, and loan funds are released. The funds are not designated, and farmers can use them according to their needs. The loans are given to the groups on behalf of their members, and the groups disburse the loans to individual members on a pro-rata basis at a market interest rate of approximately 36 to 45 percent per annum.

Once the grain is warehoused, the goods become the group's collective property. Group members become jointly responsible for the treatment, storage, and sale of the grain. By turning over ownership of the grain to the group, the group can act collectively, usually through a few appointed leaders, to sell jointly and in larger lots. Throughout the process, TechnoServe provides advice and critical market intelligence to

[1] Kwadzo, George. "Inventory Credit: A Financial Product in Ghana."

the groups. For first-time groups, TechnoServe uses dual-key security. For repeat customers more familiar with the process and the market, a single-key operation is used.

Each group maintains its own records, using a simple accounting system that TechnoServe developed. Each farmer's account is tracked independently, including the number of grain deposits, loans, fees, and any redeemed stock. Participating farmers pay fees for storage, treatment, and handling that are calculated per bag. The groups may sell in several lots at different prices, but each farmer is paid the average of the different selling prices for the number of bags he or she deposited.

To avoid speculation on the farmers' part, TechnoServe encourages what it calls "phased selling." Farmers are advised to sell the stored grain in two or three batches as prices begin to peak, rather than wait for the highest peak price. Overall profits may be lower, but this is balanced by the reduced risk of incurring a major loss. Through the adoption of a phased selling strategy, the market environment also becomes more predictable.

When the program began, the credit amount that the financial institution provided was limited to a portion—usually 70 to 80 percent—of the stored grain's harvest value. Now the inter-seasonal price gap is closing, and the loan percentage offered is decreasing to between 40 and 50 percent, corresponding to the farmers' decreasing debt capacity. When the inventory credit program started, the maize price during the lean season was typically 75 to 270 percent higher than the harvest price. This created substantial profits for farmers and ensured that the groups had the capacity to repay 70 to 80 percent of the estimated price. Because of TechnoServe's success, other groups have entered the market, and the seasonal price increases over the last two years have been only 27.5 percent. This trend has forced TechnoServe to expand its program from solely maize producers to farmers who produce cowpeas, groundnuts, and rice. This program adjustment also has ensured that the repayment rate has remained between 95 and 100 percent over the life of the program.

THE MINISTRY OF RURAL DEVELOPMENT: PILOT TESTING WAREHOUSE RECEIPTS IN RURAL NIGER

In Niger, food security has always been an issue for the rural population. Although times have often been tough, the situation has worsened in the past few years because of the FCFA's devaluation and the subsequent increase in the price of imported agricultural inputs. Acquiring these inputs often was complicated because of a lack of support, such as agricultural credits, to help farmers buy the inputs they so desperately needed. These factors often pushed farmers into debt that had to be repaid as quickly as possible. This trend forced producers to sell their products when the harvest season began so they could pay their debts, despite the fact that just six months after the harvest season began, prices for the same products often increased more than 50 percent. Consequently, Niger's Ministry of Rural Development began a pilot warehouse receipt program in 1998 to help producer groups finance inputs for harvest.

In the first phase of the two-year pilot program, the ministry established warehouses located in the villages for product storage. It used a dual-key system, whereby one key was kept by the producer organization while the other was kept by MUTEC, the financial institution that provided the loans to the producer groups. At the time of deposit, MUTEC assessed the goods and provided the producer groups with a receipt that established the quantity and quality of the goods deposited. Producer groups were then able to take out a MUTEC loan that was equivalent to the harvest price of the deposited goods, up to 1.7 million FCFA (US$2,833). When the loan were disbursed, the group was required to save 500,000 FCFA (US$833) in a savings facility at the bank. The loan term was typically five months, the length of time between the initial harvest and the estimated peak selling price. The producer groups paid an interest rate of approximately 15 percent on the full loan balance, including the amount they were required to save.

Producer groups then purchased new agricultural products and inputs and stored those at the warehouse as well for use at a later date. In April, the producer groups negotiated sale of the products with tradesmen, and in May, the sales were final. In the project's first year, producers saw their sale price increase from an estimated selling price of 1.7 million FCFA to 2.35 million FCFA, a 38 percent growth in revenues.

Within the first few years of the pilot program, the ministry has seen great improvement in producers' profits, but this success has not come without difficulties. As the pilot program enters its final phase, the ministry is committed to ensuring its continuation. Extensive lessons from the process can already be extracted, however:

- Because MUTEC must assess the goods and provide warehouse receipts, it was difficult to get the bank to meet scheduled appointments in rural areas, especially because it was difficult to contact the bank in the event a producer could not make an appointment.

- Dispersion of the producers and their goods across a rural area makes it very costly for MUTEC to assess goods. For now, the ministry subsidizes MUTEC's costs for traveling to rural areas, but eventually the ministry's support will end, and it is unclear if MUTEC will be able to bear the costs.

- MUTEC charges a high interest rate on its loans. Over the five-month loan term, the interest rate is 15 percent on the total loan amount. After subtracting the obligatory savings of 500,000 FCFA from the total loan, the effective interest rate increases to 21 percent. Because the price differential is typically only 50 percent between harvest and lean season prices, an interest rate of 21 percent significantly eats into producers' profits.

- Despite the use of warehouse receipts, the obligatory savings amount is quite high and has a significant impact on the usefulness of the loan.

To address some of these concerns, the ministry has begun looking around to find creative solutions for the project's next phase. It has begun searching for a new financial intermediary and is examining all levels of assistance, from national banks to private commercial banks. It is recruiting an agent from within the ministry who will stay in the zone to assist with the project and oversee the process. The ministry also is working to promote a regional system of private warehouses that will allow the warehouse operator to act as a third party and check on the system by empowering the operator to assess goods and issue guarantees.

Despite the pilot program's initial difficulties, the ministry believes the program has a number of advantages. It has significantly helped producer groups increase their income and their capacity to acquire inputs when they are most needed without hurting household incomes.

IX. Conclusions

In rural regions across Africa, warehouse receipt financing has clear advantages for both producers and MFIs. Producers can gain access to storage facilities, which allows them to maximize their profits as never before. The use of collateral as a loan guarantee makes the risk to MFIs minimal and opens up a new client segment that MFIs usually have difficulty reaching.

Inventory credit schemes, however, are not for everyone. The experience of groups such as TechnoServe Ghana and the Ministry of Rural Development in Niger illustrates that a warehouse receipt system is best targeted to organized producer groups that can collectively bargain in the marketplace. Individual producers need to be educated on the market's behavior and given adequate tools to ensure that all profits are not lost by speculative activities.

MFIs face many challenges and constraints to implementing an inventory credit system successfully, many of which are out of their control. Everything from a reliable warehouse system in the region to appropriate government oversight can greatly affect a program's success.

Through careful product development, however, MFIs can create an inventory credit system that works smoothly and profitably. At the same time, MFIs must be careful to appropriately price products, have a thorough knowledge of the market and sector in which they are working, and work to actively facilitate negotiating and selling. All these factors have direct implications on the sustainability of MFI programs and their ability to continue providing such an important financial product.

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